

## WHAT IS CLAIMED IS:

1. An image display apparatus control method characterized by comprising, when image display is to be started by outputting a signal from a modulation circuit to a display panel for displaying an image by irradiation with electrons from an electron source to fluorescent substances, stopping the output from the modulation circuit to the display panel until the signal output from the modulation circuit to the display panel is determined.

2. An image display apparatus control method characterized by comprising, when image display is to be started by outputting a signal from a modulation circuit to a display panel for displaying an image by irradiation with electrons from an electron source to fluorescent substances, delaying the output of the signal from the modulation circuit to the display panel after a power source is turned on, and determining the signal output from the modulation circuit to the display panel during the delay time.

3. An image display apparatus control method characterized by comprising, when image display is to be started by outputting a signal from a modulation circuit to a display panel for displaying an image by irradiation with electrons from an electron source to fluorescent substances, stopping application of an acceleration

potential for accelerating electrons from the electron source until the signal output from the modulation circuit to the display panel is determined.

4. An image display apparatus control method  
5 characterized by comprising, when image display is to be started by outputting a signal from a modulation circuit to a display panel for displaying an image by irradiation with electrons from an electron source to fluorescent substances, delaying application of an acceleration potential for accelerating electrons from the electron source after a power source is turned on, and determining the signal output from the modulation circuit to the display panel during the delay time.

5. An image display apparatus control method  
15 characterized by comprising, when image display is to be started by outputting a signal from a scanning circuit to a display panel for displaying an image by irradiation with electrons from an electron source to fluorescent substances, stopping the output from the scanning circuit to the display panel until the signal output from the scanning circuit to the display panel is determined.

6. An image display apparatus control method  
characterized by comprising, when image display is to be started by outputting a signal from a scanning circuit to a display panel for displaying an image by irradiation with electrons from an electron source to fluorescent substances,

delaying the output of the signal from the scanning circuit to the display panel after a power source is turned on, and determining the signal output from the scanning circuit to the display panel during the delay time.

5        7. An image display apparatus control method characterized by comprising, when image display is to be started by outputting a signal from a scanning circuit to a display panel for displaying an image by irradiation with electrons from an electron source to fluorescent substances,  
10      10 stopping application of an acceleration potential for accelerating electrons from the electron source until the signal output from the scanning circuit to the display panel is determined.

15      8. An image display apparatus control method characterized by comprising, when image display is to be started by outputting a signal from a scanning circuit to a display panel for displaying an image by irradiation with electrons from an electron source to fluorescent substances, delaying application of an acceleration potential for  
20      20 accelerating electrons from the electron source after a power source is turned on, and determining the signal output from the scanning circuit to the display panel during the delay time.

25      9. An image display apparatus control method characterized by comprising, when image display is to be started by outputting a signal from a modulation circuit

to a display panel for displaying an image by irradiation with electrons from an electron source to fluorescent substances, stopping the output from the modulation circuit to the display panel until a power source voltage of the 5 modulation circuit reaches a desired value.

10. An image display apparatus control method characterized by comprising, when image display is to be started by outputting a signal from a modulation circuit to a display panel for displaying an image by irradiation 10 with electrons from an electron source to fluorescent substances, delaying the output of the signal from the modulation circuit to the display panel after a power source is turned on, and setting a power source voltage of the modulation circuit to a desired value during the delay time.

15. An image display apparatus control method characterized by comprising, when image display is to be started by outputting a signal from a modulation circuit to a display panel for displaying an image by irradiation with electrons from an electron source to fluorescent 20 substances, stopping application of an acceleration potential for accelerating electrons from the electron source until a power source voltage of the modulation circuit reaches a desired value.

25. An image display apparatus control method characterized by comprising, when image display is to be started by outputting a signal from a modulation circuit

to a display panel for displaying an image by irradiation with electrons from an electron source to fluorescent substances, delaying application of an acceleration potential for accelerating electrons from the electron source after a power source is turned on, and setting a power source voltage of the modulation circuit to a desired value during the delay time.

13. An image display apparatus control method characterized by comprising, when image display is to be started by outputting a signal from a scanning circuit to a display panel for displaying an image by irradiation with electrons from an electron source to fluorescent substances, stopping the output from the scanning circuit to the display panel until a power source voltage of the scanning circuit reaches a desired value.

14. An image display apparatus control method characterized by comprising, when image display is to be started by outputting a signal from a scanning circuit to a display panel for displaying an image by irradiation with electrons from an electron source to fluorescent substances, delaying the output of the signal from the scanning circuit to the display panel after a power source is turned on, and setting a power source voltage of the scanning circuit to a desired value during the delay time.

25 15. An image display apparatus control method characterized by comprising, when image display is to be

started by outputting a signal from a scanning circuit to a display panel for displaying an image by irradiation with electrons from an electron source to fluorescent substances, stopping application of an acceleration potential for  
5 accelerating electrons from the electron source until a power source voltage of the scanning circuit reaches a desired value.

16. An image display apparatus control method characterized by comprising, when image display is to be  
10 started by outputting a signal from a scanning circuit to a display panel for displaying an image by irradiation with electrons from an electron source to fluorescent substances, delaying application of an acceleration potential for accelerating electrons from the electron source after a  
15 power source is turned on, and setting a power source voltage of the scanning circuit to a desired value during the delay time.

17. An image display apparatus control method characterized by comprising, when a power source is to be  
20 turned off while an image is displayed by outputting a signal from a modulation circuit to a display panel for displaying an image by irradiation with electrons from an electron source to fluorescent substances, stopping the output of the signal from the modulation circuit to the  
25 display panel, and then stopping supply of power to the modulation circuit.

18. An image display apparatus control method characterized by comprising, when a power source is to be turned off while an image is displayed by outputting a signal from a scanning circuit to a display panel for displaying an image by irradiation with electrons from an electron source to fluorescent substances, stopping the output of the signal from the scanning circuit to the display panel, and then stopping supply of power to the scanning circuit.
- 10 19. An image display apparatus control method characterized by comprising, when emergency shutdown is to be performed while an image is displayed by outputting a signal from a modulation circuit to a display panel for displaying an image by irradiation with electrons from an electron source to fluorescent substances, stopping the output of the signal from the modulation circuit to the display panel, and then stopping supply of power to the modulation circuit.
- 15 20. An image display apparatus control method characterized by comprising, when emergency shutdown is to be performed while an image is displayed by outputting a signal from a scanning circuit to a display panel for displaying an image by irradiation with electrons from an electron source to fluorescent substances, stopping the output of the signal from the scanning circuit to the display panel, and then stopping supply of power to the

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scanning circuit.

21. An image display apparatus control method characterized by comprising, when a voltage abnormality is observed while an image is displayed by outputting a signal from a modulation circuit to a display panel for displaying an image by irradiation with electrons from an electron source to fluorescent substances, stopping the output of the signal from the modulation circuit to the display panel, and then stopping supply of power to the modulation circuit.

10 22. An image display apparatus control method characterized by comprising, when a voltage abnormality is observed while an image is displayed by outputting a signal from a scanning circuit to a display panel for displaying an image by irradiation with electrons from an electron source to fluorescent substances, stopping the output of the signal from the scanning circuit to the display panel, and then stopping supply of power to the scanning circuit.

15 23. The image display apparatus control method according to claim 21 or 22, wherein the power is supplied from an auxiliary power source in performing the control.

20 24. The image display apparatus control method according to any one of claims 1, 5, 9, and 13, wherein a time during which the signal output to the display panel is stopped is a predetermined time.

25 25. The image display apparatus control method according to any one of claims 2, 4, 6, 8, 10, 12, 14, and

16, wherein the delay time is a predetermined time.

26. The image display apparatus control method according to any one of claims 3, 7, 11, and 15, wherein a time during which application of the acceleration potential is stopped is a predetermined time.  
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27. The image display apparatus control method according to any one of claims 1, 5, 9, and 13, wherein a time during which the signal output to the display panel is stopped is a time during which a predetermined number 10 of sync signals of image signals is counted.

28. The image display apparatus control method according to any one of claims 2, 4, 6, 8, 10, 12, 14, and 16, wherein the delay time is a time during which a predetermined number of sync signals of image signals is 15 counted.

29. The image display apparatus control method according to any one of claims 3, 7, 11, and 15, wherein a time during which application of the acceleration potential is stopped is a time during which a predetermined 20 number of sync signals of image signals is counted.

30. The image display apparatus control method according to any one of claims 1 to 29, wherein the electron source comprises a plurality of row-direction wiring lines for receiving a scanning signal, a plurality of 25 column-direction wiring lines for receiving a modulation signal, and a plurality of electron-emitting devices

connected to the row-direction wiring lines and the column-direction wiring lines.

31. The image display apparatus control method according to any one of claims 1 to 30, wherein the  
5 acceleration potential for accelerating electrons from the electron source is a potential higher by not less than 500 V than a potential applied to emit electrons in the electron source.

32. The image display apparatus control method  
10 according to any one of claims 1 to 30, wherein the acceleration potential for accelerating electrons from the electron source is a potential higher by not less than 3,000 V than a potential applied to emit electrons in the electron source.

15 33. The image display apparatus control method according to any one of claims 1 to 30, wherein the acceleration potential for accelerating electrons from the electron source is a potential higher by not less than 5,000 V than a potential applied to emit electrons in the electron source.  
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34. An image display apparatus characterized by comprising: a display panel for displaying an image by irradiation with electrons from an electron source to fluorescent substances; a scanning circuit for supplying a scanning signal to said display panel; a modulation circuit for supplying a modulation signal to said display  
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panel; and a control circuit for stopping output from said scanning circuit and/or said modulation circuit to said display panel until a signal output from said scanning circuit and/or said modulation circuit to said display 5 panel is determined in starting image display by outputting a signal from said scanning circuit and/or said modulation circuit to said display panel.

35. An image display apparatus characterized by comprising: a display panel for displaying an image by 10 irradiation with electrons from an electron source to fluorescent substances; a scanning circuit for supplying a scanning signal to said display panel; a modulation circuit for supplying a modulation signal to said display panel; and a control circuit for delaying output of a signal 15 from said scanning circuit and/or said modulation circuit to said display panel after a power source is turned on in starting image display by outputting a signal from said scanning circuit and/or said modulation circuit to said display panel, wherein the signal output from said scanning 20 circuit and/or said modulation circuit to said display panel is determined during the delay time.

36. An image display apparatus characterized by comprising: a display panel for displaying an image by irradiation with electrons from an electron source to 25 fluorescent substances; an acceleration potential supply circuit for supplying to said display panel an acceleration

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potential for accelerating electrons from the electron source; a scanning circuit for supplying a scanning signal to said display panel; a modulation circuit for supplying a modulation signal to said display panel; and a control 5 circuit for stopping supply of the acceleration potential until a signal output from said scanning circuit and/or said modulation circuit to said display panel is determined in starting image display by outputting a signal from said scanning circuit and/or said modulation circuit to said 10 display panel.

37. An image display apparatus characterized by comprising: a display panel for displaying an image by irradiation with electrons from an electron source to fluorescent substances; an acceleration potential supply 15 circuit for supplying to said display panel an acceleration potential for accelerating electrons from the electron source; a scanning circuit for supplying a scanning signal to said display panel; a modulation circuit for supplying a modulation signal to said display panel; and a control 20 circuit for delaying supply of the acceleration potential after a power source is turned on in starting image display by outputting a signal from said scanning circuit and/or said modulation circuit to said display panel, wherein the signal output from said scanning circuit and/or said 25 modulation circuit to said display panel is determined during the delay time.

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38. An image display apparatus characterized by comprising: a display panel for displaying an image by irradiation with electrons from an electron source to fluorescent substances; a scanning circuit for supplying 5 a scanning signal to said display panel; a modulation circuit for supplying a modulation signal to said display panel; and a control circuit for stopping output from said scanning circuit and/or said modulation circuit to said display panel until a power source voltage of said scanning 10 circuit and/or said modulation circuit reaches a desired value in starting image display by outputting a signal from said scanning circuit and/or said modulation circuit to said display panel.

39. An image display apparatus characterized by comprising: a display panel for displaying an image by irradiation with electrons from an electron source to fluorescent substances; a scanning circuit for supplying a scanning signal to said display panel; a modulation circuit for supplying a modulation signal to said display 15 panel; and a control circuit for delaying output of a signal from said scanning circuit and/or said modulation circuit to said display panel after a power source is turned on in starting image display by outputting a signal from said scanning circuit and/or said modulation circuit to said display panel, wherein a power source voltage of said scanning circuit and/or said modulation circuit reaches a 20 25

desired value during the delay time.

40. An image display apparatus characterized by comprising: a display panel for displaying an image by irradiation with electrons from an electron source to 5 fluorescent substances; an acceleration potential supply circuit for supplying to said display panel an acceleration potential for accelerating electrons from the electron source; a scanning circuit for supplying a scanning signal to said display panel; a modulation circuit for supplying 10 a modulation signal to said display panel; and a control circuit for stopping supply of the acceleration potential until a power source voltage of said scanning circuit and/or 15 said modulation circuit reaches a desired value in starting image display by outputting a signal from said scanning circuit and/or said modulation circuit to said display panel.

41. An image display apparatus characterized by comprising: a display panel for displaying an image by irradiation with electrons from an electron source to 20 fluorescent substances; an acceleration potential supply circuit for supplying to said display panel an acceleration potential for accelerating electrons from the electron source; a scanning circuit for supplying a scanning signal to said display panel; a modulation circuit for supplying 25 a modulation signal to said display panel; and a control circuit for delaying supply of the acceleration potential

after a power source is turned on in starting image display by outputting a signal from said scanning circuit and/or said modulation circuit to said display panel, wherein a power source voltage of said scanning circuit and/or said 5 modulation circuit reaches a desired value during the delay time.

42. An image display apparatus characterized by comprising: a display panel for displaying an image by irradiation with electrons from an electron source to 10 fluorescent substances; an acceleration potential supply circuit for supplying to said display panel an acceleration potential for accelerating electrons from the electron source; a scanning circuit for supplying a scanning signal to said display panel; a modulation circuit for supplying 15 a modulation signal to said display panel; and a control circuit for stopping output of a signal from said scanning circuit and/or said modulation circuit to said display panel, and then stopping supply of power to said scanning circuit and/or said modulation circuit in turning off a 20 power source while an image is displayed by outputting a signal from said scanning circuit and/or said modulation circuit to said display panel.

43. An image display apparatus characterized by comprising: a display panel for displaying an image by irradiation with electrons from an electron source to 25 fluorescent substances; an acceleration potential supply

circuit for supplying to said display panel an acceleration potential for accelerating electrons from the electron source; a scanning circuit for supplying a scanning signal to said display panel; a modulation circuit for supplying 5 a modulation signal to said display panel; and a control circuit for stopping output of a signal from said scanning circuit and/or said modulation circuit to said display panel, and then stopping supply of power to said scanning circuit and/or said modulation circuit in performing 10 emergency shutdown while an image is displayed by outputting a signal from said scanning circuit and/or said modulation circuit to said display panel.

44. An image display apparatus characterized by comprising: a display panel for displaying an image by 15 irradiation with electrons from an electron source to fluorescent substances; an acceleration potential supply circuit for supplying to said display panel an acceleration potential for accelerating electrons from the electron source; a scanning circuit for supplying a scanning signal 20 to said display panel; a modulation circuit for supplying a modulation signal to said display panel; and a control circuit for stopping output of a signal from said scanning circuit and/or said modulation circuit to said display panel, and then stopping supply of power to said scanning 25 circuit and/or said modulation circuit when a voltage abnormality is observed while an image is displayed by

outputting a signal from said scanning circuit and/or said modulation circuit to said display panel.

45. An image display apparatus characterized by comprising: a display panel for displaying an image by irradiation with electrons from an electron source to fluorescent substances; an acceleration potential supply circuit for supplying to said display panel an acceleration potential for accelerating electrons from the electron source; a scanning circuit for supplying a scanning signal to said display panel; a modulation circuit for supplying a modulation signal to said display panel; a first power source for supplying power to said acceleration potential supply circuit and/or said scanning circuit and/or said modulation circuit; and a second power source for supplying power to said scanning circuit and/or said modulation circuit upon an abnormal state.

46. The image forming apparatus according to claim 45, wherein the abnormal state is emergency shutdown.

47. The image forming apparatus according to claim 45 or 46, wherein said second power source comprises a capacitor or a battery.

48. The image display apparatus according to any one of claims 34 to 47, wherein the electron source comprises a plurality of row-direction wiring lines for receiving a scanning signal, a plurality of column-direction wiring lines for receiving a modulation signal, and a plurality

of electron-emitting devices connected to the row-direction wiring lines and the column-direction wiring lines.

49. The image display apparatus according to any one  
5 of claims 34 to 48, wherein the acceleration potential for  
accelerating electrons from the electron source is a  
potential higher by not less than 500 V than a potential  
applied to emit electrons in the electron source.

50. The image display apparatus according to any one  
10 of claims 34 to 48, wherein the acceleration potential for  
accelerating electrons from the electron source is a  
potential higher by not less than 3,000 V than a potential  
applied to emit electrons in the electron source.

51. The image display apparatus according to any one  
15 of claims 34 to 48, wherein the acceleration potential for  
accelerating electrons from the electron source is a  
potential higher by not less than 5,000 V than a potential  
applied to emit electrons in the electron source.